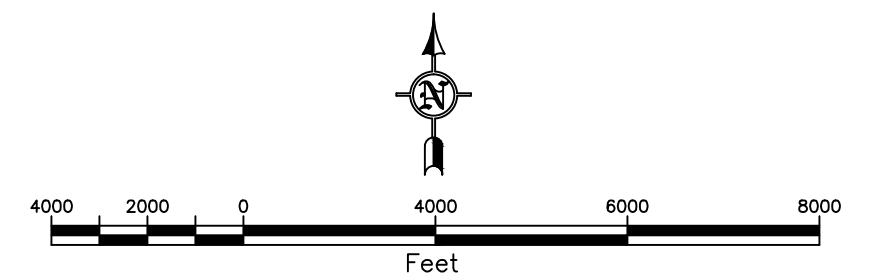


LEGEND

- Proposed pipeline centerline
  - MTV-1 MT DEQ pipeline alternative route
  - CAR-013 Access Road
  - PS-09 Pump Station
  - MLV-01 Valve Site
  - 45 Milepost
  - Approximate lek location
  - 3-mile buffer
  - 1-mile buffer
  - Viewshed from lek
  - Suitable nesting habitat\*  
North of Milk River: Average shrub cover  $\geq 15\%$ , silver sagebrush is approximately half of the shrub cover (Tack 2006).  
South of Milk River: Average shrub cover  $\geq 15\text{-}31\%$  of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).  
\*All nesting habitat based on field mapping within 150' of centerline.  
NOTE: Implement Mitigation I at all areas with suitable nesting habitat.
- Proposed Construction Constraints and Mitigation
- Constraint I. No construction from March 1 through June 15.
  - Constraint II. No construction from  $\frac{1}{2}$  hour before sunrise to 2 hours after sunrise from March 1 through June 15.
  - Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
  - Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

- Notes:
- Sage-grouse or sage-grouse sign were located at lek site in 2005.
  - RECOMMEND CONSTRAINT II RATHER THAN CONSTRAINT I SINCE PROJECT IS ON THE EDGE OF THE 3-MILE BUFFER AND ADJACENT TO AN ACTIVE GRAVEL PIT.

Centerline and facilities: 03/26/10.  
Aerial photography: NAIP 2009.  
Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



Greater sage-grouse lek 753 : Viewshed from lek and suitable nesting habitat along Keystone XL project



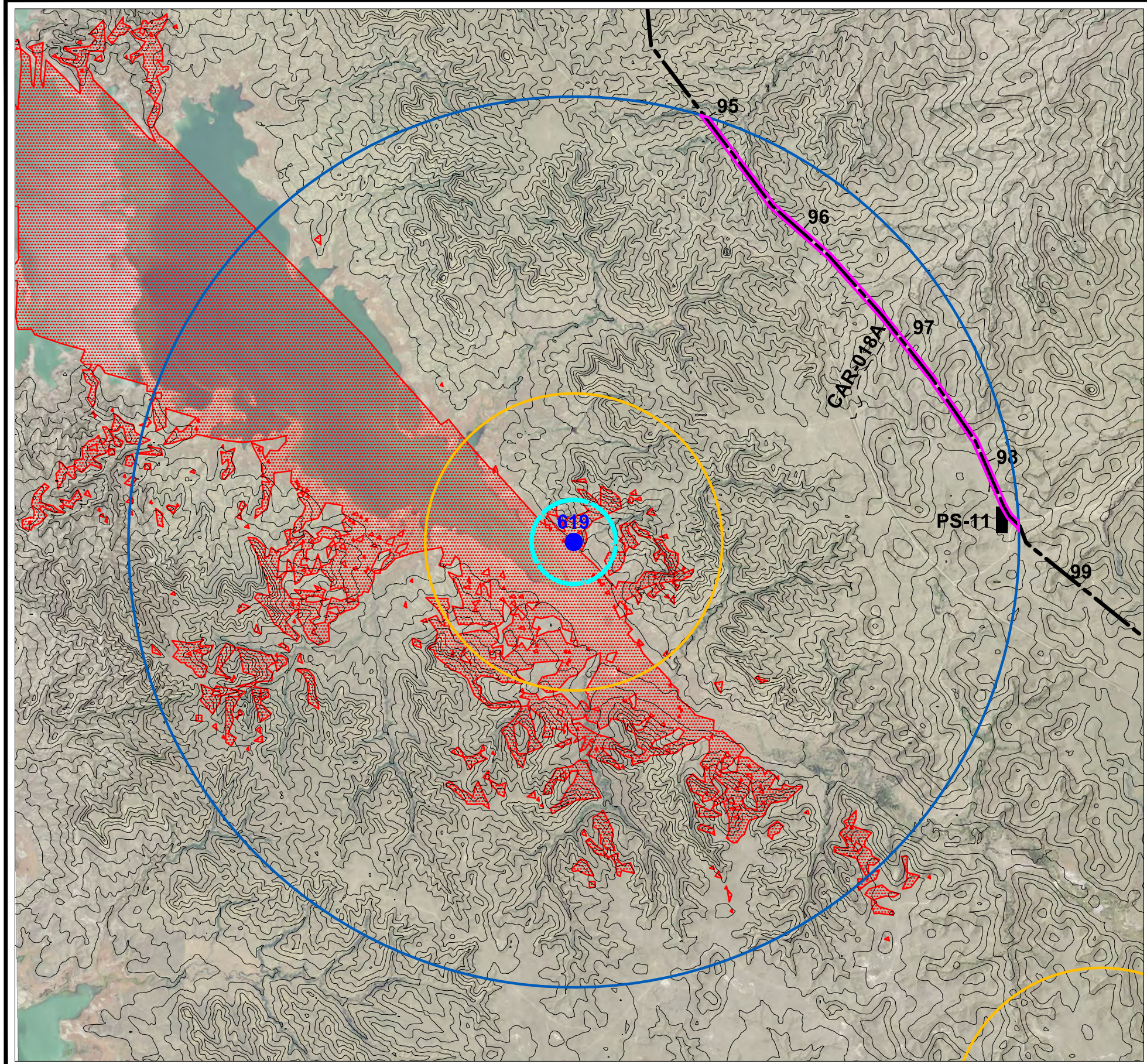
**WESTECH**  
Environmental Services, Inc.  
P.O. Box 6045  
Helena, Montana 59604

SCALE: 1"=4000'  
DATE: 07/02/10  
DRAWN BY: DC  
CHECKED BY: JB  
FILE: KXL1006.DWG

FIGURE

4

SHEET: 1 of 1

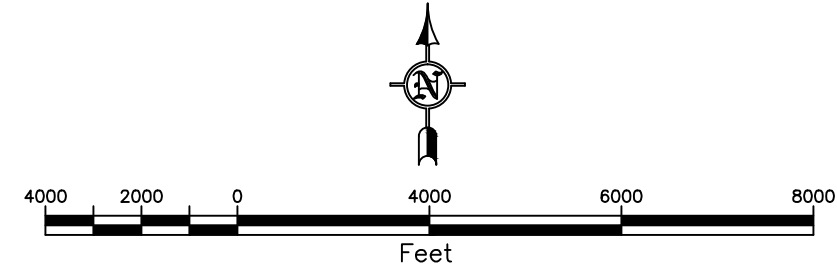


LEGEND

- Proposed pipeline centerline
  - MTV-1 MT DEQ pipeline alternative route
  - CAR-013 Access Road
  - PS-09 Pump Station
  - MLV-01 Valve Site
  - 45 Milepost
  - Approximate lek location
  - 3-mile buffer
  - 1-mile buffer
  - Viewshed from lek
  - Suitable nesting habitat\*  
North of Milk River: Average shrub cover ≥15%, silver sagebrush is approximately half of the shrub cover (Tack 2006).  
South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).  
\*All nesting habitat based on field mapping within 150' of centerline.  
NOTE: Implement Mitigation I at all areas with suitable nesting habitat.
- Proposed Construction Constraints and Mitigation
- Constraint I. No construction from March 1 through June 15.
  - Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
  - Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
  - Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

Notes:  
1. Sage-grouse or sage-grouse sign were located at lek site in 1996.

Centerline and facilities: 03/26/10.  
Aerial photography: NAIP 2009.  
Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



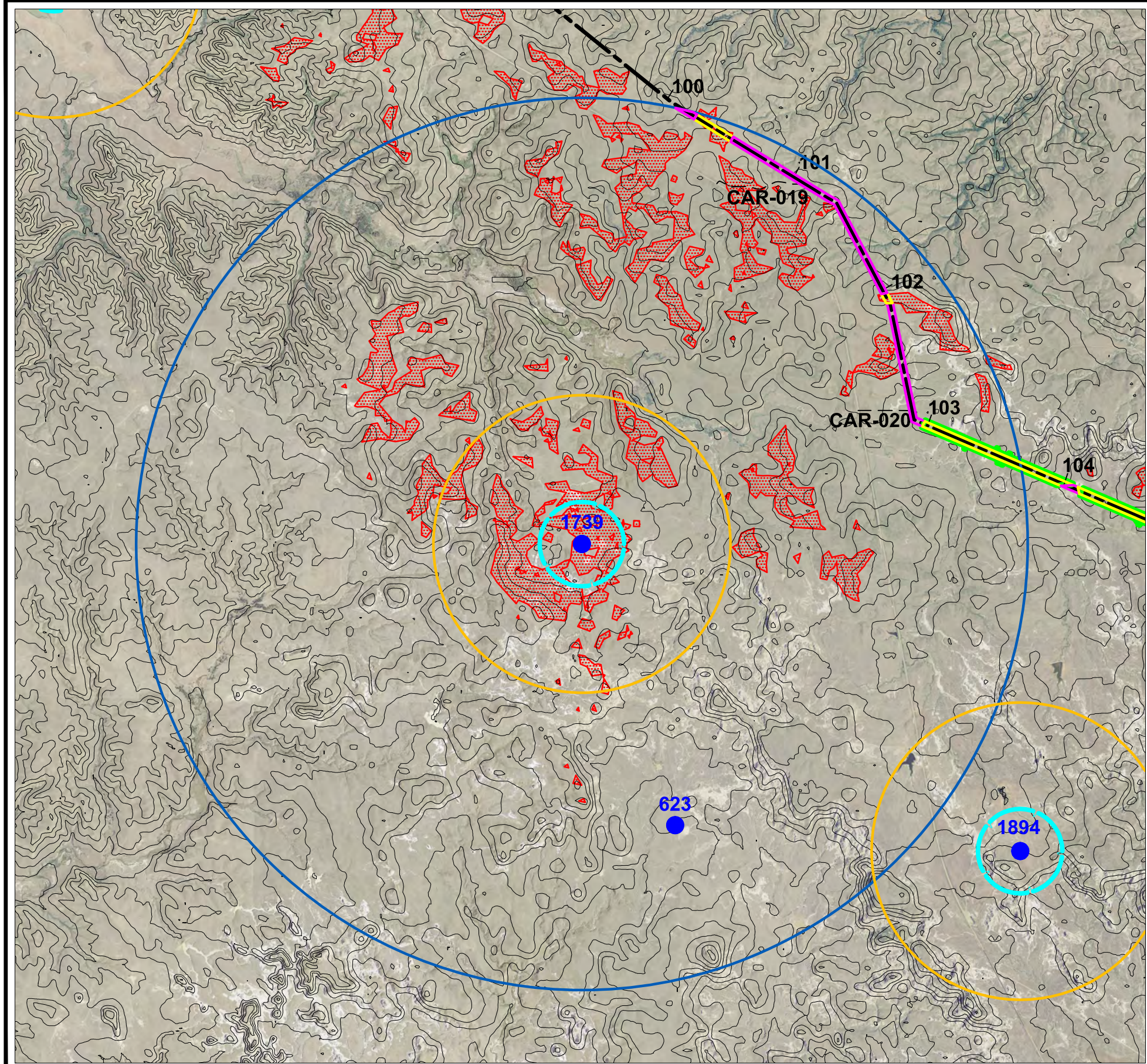
Greater sage-grouse lek 619 : Viewshed from lek and suitable nesting habitat along Keystone XL project



**WESTECH**  
Environmental Services, Inc.  
P.O. Box 6045  
Helena, Montana 59604

SCALE: 1"=4000'  
DATE: 07/02/10  
DRAWN BY: DC  
CHECKED BY: JB  
FILE: KXL1006.DWG

FIGURE  
**5**  
SHEET: 1 of 1

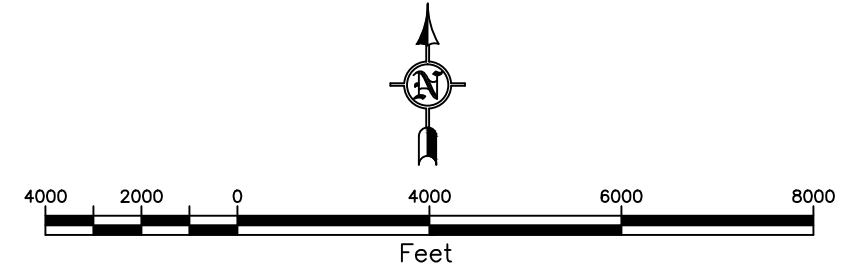


LEGEND

- Proposed pipeline centerline
  - MTV-1 MT DEQ pipeline alternative route
  - CAR-013 Access Road
  - PS-09 Pump Station
  - MLV-01 Valve Site
  - 45 Milepost
  - Approximate lek location
  - 3-mile buffer
  - 1-mile buffer
  - Viewshed from lek
  - Suitable nesting habitat\*  
North of Milk River: Average shrub cover ≥15%, silver sagebrush is approximately half of the shrub cover (Tack 2006).  
South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).  
\*All nesting habitat based on field mapping within 150' of centerline.  
NOTE: Implement Mitigation I at all areas with suitable nesting habitat.
- Proposed Construction Constraints and Mitigation**
- Constraint I. No construction from March 1 through June 15.
  - Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
  - Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
  - Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

- Notes:
- One male sage-grouse observed in 2005.
  - ALTHOUGH SHOWN AS CONSTRAINT I, RECOMMEND CONSTRAINT II WHERE PROJECT IS VISIBLE FROM LEK SITE SINCE PROJECT IS ON EDGE OF 3-MILE BUFFER AND HIGHWAY 24 IS BETWEEN LEK AND PROJECT.

Centerline and facilities: 03/26/10.  
Aerial photography: NAIP 2009.  
Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



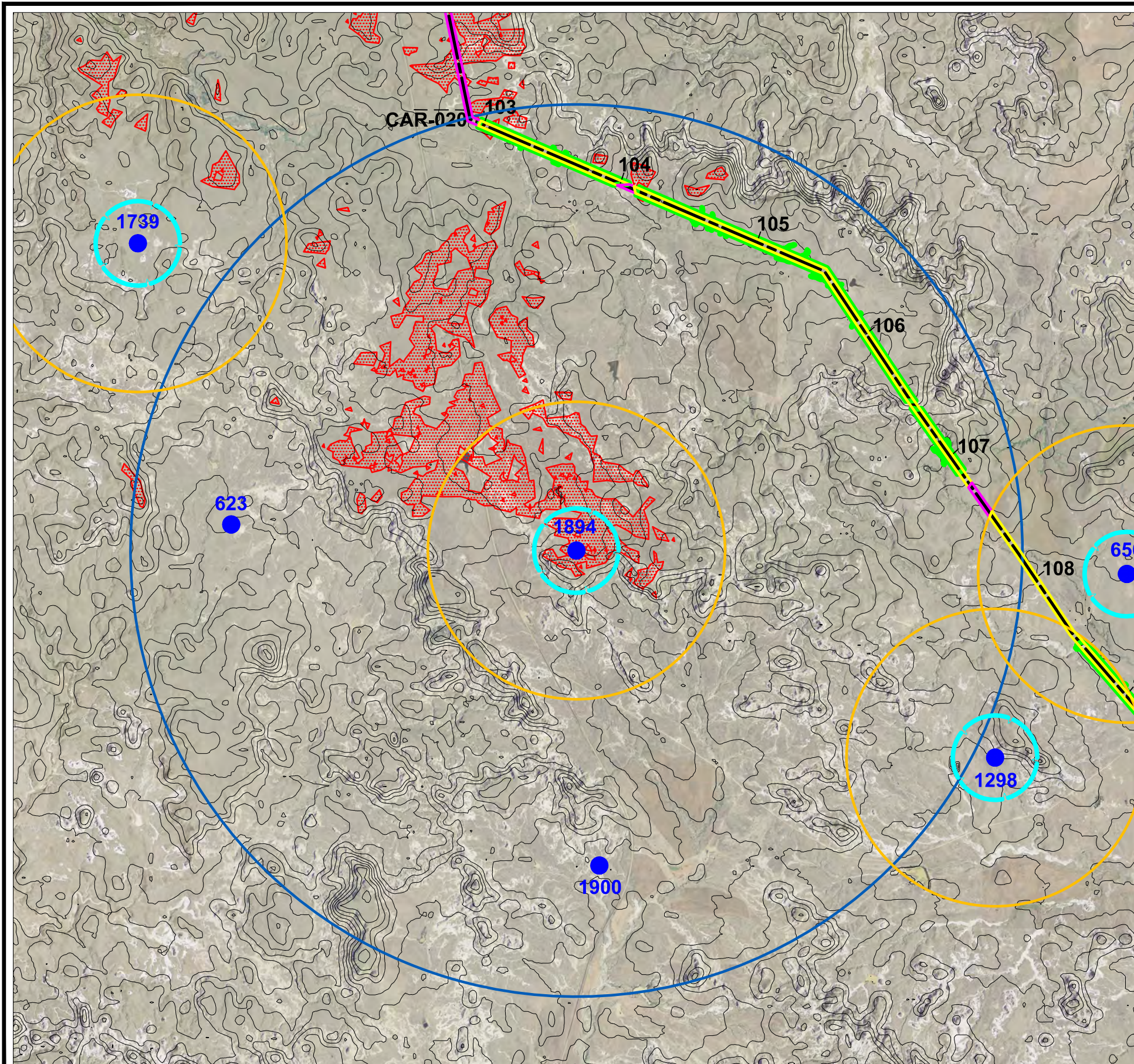
Greater sage-grouse lek 1739 : Viewshed from lek and suitable nesting habitat along Keystone XL project



**WESTECH**  
Environmental Services, Inc.  
P.O. Box 6045  
Helena, Montana 59604

SCALE: 1"=4000'  
DATE: 07/02/10  
DRAWN BY: DC  
CHECKED BY: JB  
FILE: KXL1006.DWG

FIGURE  
**6**  
SHEET: 1 of 1

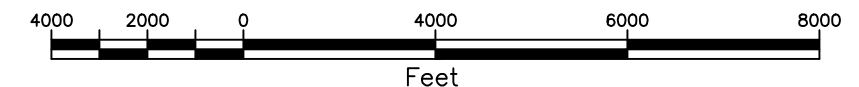


LEGEND

- Proposed pipeline centerline
  - MTV-1 MT DEQ pipeline alternative route
  - CAR-013 Access Road
  - PS-09 Pump Station
  - MLV-01 Valve Site
  - 45 Milepost
  - Approximate lek location
  - 3-mile buffer
  - 1-mile buffer
  - Viewshed from lek
  - Suitable nesting habitat\*  
North of Milk River: Average shrub cover  $\geq 15\%$ , silver sagebrush is approximately half of the shrub cover (Tack 2006).  
South of Milk River: Average shrub cover  $\geq 15\text{-}31\%$  of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).  
\*All nesting habitat based on field mapping within 150' of centerline.  
NOTE: Implement Mitigation I at all areas with suitable nesting habitat.
- Proposed Construction Constraints and Mitigation
- Constraint I. No construction from March 1 through June 15.
  - Constraint II. No construction from  $\frac{1}{2}$  hour before sunrise to 2 hours after sunrise from March 1 through June 15.
  - Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
  - Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

Notes:  
1. Nine male sage-grouse observed in 2009.

Centerline and facilities: 03/26/10.  
Aerial photography: NAIP 2009.  
Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



Greater sage-grouse lek 1894 : Viewshed from lek and suitable nesting habitat along Keystone XL project



**WESTECH**  
Environmental Services, Inc.  
P.O. Box 6045  
Helena, Montana 59604

SCALE: 1"=4000'  
DATE: 07/02/10  
DRAWN BY: DC  
CHECKED BY: JB  
FILE: KXL1006.DWG

FIGURE

7

SHEET: 1 of 1